Editor

Valeri Mladenov

Associate Editors

Elias Giacoumidis

Jinlong Wei

Recent Advances on Systems, Signals, Control, Communications and Computers

- Proceedings of the 13th International Conference on Data Networks, Communications, Computers (DNCOCO '15)
- Proceedings of the 10th International Conference on Dynamical Systems and Control (CONTROL '15)
- Proceedings of the 8th European Computing Conference (ECC '15)
- Proceedings of the 7th International Conference on Sensors and Signals (SENSIG '15)

Budapest, Hungary, December 12-14, 2015

Recent Advances in Electrical Engineering Series | 57

Recent Advances on Systems, Signals, Control, Communications and Computers

RECENT ADVANCES on SYSTEMS, SIGNALS, CONTROL, COMMUNICATIONS and COMPUTERS

Proceedings of the 13th International Conference on Data Networks, Communications, Computers (DNCOCO '15)
Proceedings of the 10th International Conference on Dynamical Systems and Control (CONTROL '15)
Proceedings of the 8th European Computing Conference (ECC '15)
Proceedings of the 7th International Conference on Sensors and Signals (SENSIG '15)

Budapest, Hungary
December 12-14, 2015

Recent Advances in Electrical Engineering Series | 57

ISSN: 1790-5117
ISBN: 978-1-61804-355-9

RECENT ADVANCES on SYSTEMS, SIGNALS, CONTROL, COMMUNICATIONS and COMPUTERS

Proceedings of the 13th International Conference on Data Networks, Communications, Computers (DNCOCO '15)
Proceedings of the 10th International Conference on Dynamical Systems and Control (CONTROL '15)
Proceedings of the 8th European Computing Conference (ECC '15)
Proceedings of the 7th International Conference on Sensors and Signals (SENSIG '15)

Budapest, Hungary
December 12-14, 2015

Published by WSEAS Press
www.wseas.org

Copyright © 2015, by WSEAS Press

All the copyright of the present book belongs to the World Scientific and Engineering Academy and Society Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Editor of World Scientific and Engineering Academy and Society Press.

All papers of the present volume were peer reviewed by no less that two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.

ISSN: 1790-5117
ISBN: 978-1-61804-355-9

RECENT ADVANCES on SYSTEMS, SIGNALS, CONTROL, COMMUNICATIONS and COMPUTERS

Proceedings of the 13th International Conference on Data Networks, Communications, Computers (DNCOCO '15)
Proceedings of the 10th International Conference on Dynamical Systems and Control (CONTROL '15)
Proceedings of the 8th European Computing Conference (ECC '15)
Proceedings of the 7th International Conference on Sensors and Signals (SENSIG '15)

Budapest, Hungary
December 12-14, 2015

Editor:
Prof. Valeri Mladenov, Technical University of Sofia, Bulgaria

Associate Editors:
Dr. Elias Giacoumidis, University of Sydney, Australia
Dr. Jinlong Wei, ADVA Optical Networking SE, Germany

Committee Members-Reviewers:
Haziq Jeelani
Valentina E. Balas
Yu Zhang
YuLung Wu
Ankit Patel
Nikos Loukeris
Panagiotis Gioannis
Md. Jakir Hossen
Hime Aguiar
Giovanni Aiello
Seong Baeg Kim
Satish Kumar Duraiswamy
Eleonora Catsigeras
JainShing Wu
Montri Phothisonothai
Kevin Kam Fung Yuen
Aw Yoke Cheng
Manuela Panoiu
Eleazar Jimenez Serrano
Onintra Poobrasert
Elena Bautu
Josip Music
Kyunghee Lee
Mueen Uddin Awan
Paresh Rathod
Pavel Varacha
Sorinel Oprisan
Gabriel Badescu
Constantin Popescu
Petr Hajek
Alvaro Santos
Poom Kumam
Frangiskos Topalis
Ajay Poddar
Mariya Aleksandrova
Chandrasekaran Subramaniam
Chi Chieh-Tsung
Betül Kan
Payam Porkar
Bazil Taha Ahmed
Sandra Sendra
Ozlem Coskun
Neha Srivastava
Mustafa Yagimli
Igor Astrov
Jerzy Garus
Tamer Khatib
Mohamed Khater
Nikhil Raj
Ioan Susnea
Masaji Tanaka
Inacio Fonseca
Catalin Ionut Silvestru
Yilun Shang
Anastasios Salis
Radha Gupta
Dalibor Biolek
Morale Terry
Sorin Ioan Deaconu
Farhad Mehran
Kei Eguchi
Mohammad Firoj Mithani
Essam Khalifa
Ali Elnaiem
Mohamed Hashem
Mostafa Aref
Taha Elarif
El-Sayed El-Horbaty
Taymoor M. Nazmy
Mohamed. F. Tolba
Ana-Cornelia Badea
José Metrôlho
Dzenana Donko
S. Sarala Subramani
Klimis Ntalianis
Hani Mahdi
Kostantinos Kalovrektis

Preface

This year the 13th International Conference on Data Networks, Communications, Computers (DNCOCO '15), the 10th International Conference on Dynamical Systems and Control (CONTROL '15), the 8th European Computing Conference (ECC '15) and the 7th International Conference on Sensors and Signals (SENSIG '15) were held in Budapest, Hungary, December 12-14, 2015. The conferences provided a platform to discuss data networks, communications, computers, programming languages, operating systems, dynamical systems, control, network architecture, wireless networks, information security, sensors, signal processing etc. with participants from all over the world, both from academia and from industry.

Their success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of these conferences are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

Conferences such as these can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

Table of Contents

Plenary Lecture 1: Energy Efficiency Approach: From Wireless Networks to Potential Applications 13
Zoran Bojkovic

Plenary Lecture 2: Some Applications of Fuzzy Logic in the Selection of Alternatives Considering Multiple Parameters 14
Amaury A. Caballero

Plenary Lecture 3: Interactive Driving Simulators – Modern Tools for Training and Research and Development in the Area of the Human–Machine Interaction (HMI) in Transport 15
Petr Bouchner

Plenary Lecture 4: Hierarchical Fuzzy Petri Nets Approach of Simultaneous Task Assignment for Autonomous Mobile Robots 16
Gabriela Tont

Plenary Lecture 5: Data Compression Today: A Journey through Better Understanding Data 17
Bruno Carpentieri

Information Technology Infrastructure Management - Understanding Human Element 19
Seppo Sirkemaa

Performance Analysis of Network Coding-Based Cooperative ARQ with Carry-Over of Backoff Counter Freezing After Collision 23
Katsumi Sakakibara, Jumpei Taketsugu

Analytical and Numerical Investigations of Piece-Wise Smooth Tuned Mass Dampers 33
Bernardino Chiaia, Luca Placidi, Livio Conti

Optical-Phase Conjugation Nonlinearity Compensation in Flexi-Grid Optical Networks 39
C. Sanchez, M. McCarthy, A. D. Ellis, P. Wright, A. Lord

Development of Mixed Screen Content Coding Technology: SCC-HEVC Extensions Framework 44
Dragorad Milovanovic, Zoran Bojkovic

A Bound on the Number of Middle-Stage Crossbars in f-Cast Rearrangeable Clos Networks 51
Marek Kubale, Pawel Obszarski

Reliability Problems in Prediction Diagnostics for Uncertain Systems 55
Mirko Novak, Petr Bouchner, Emil Pelikan, Miroslav Svitek, Zdenek Votruba

LSP Placement in an MPLS-TP Mesh Network with Shared Mesh Protection Mechanism 65
Claudio Roberto Ferreira Costa, Wagner Luiz Zucchi

Visual Investigation of Driver Behavior for Fatigue Detection – Driving Simulator Experiments 72
Alina Mashko, Petr Bouchner

ISBN: 978-1-61804-355-9

Hierarchical Fuzzy Petri Nets Approach of Simultaneous Task Assignment for Autonomous Mobile Robots 77
Gabriela Tont

Concept for Development of Large-Scale Applications through Configuration Frameworks 83
Petr Vobornik

Research of Influence of Vibration Impact of the Basis in the Micromechanical Gyroscope 91
Galina Vavilova, Olga Galtseva, Inna Plotnikova

Extend IT Services in Process Control Domain for Onshore Oilfields 96
Nicoleta-Marilena Matei, Dan Popescu

Multispectral Sensory Head Calibration for Reconnaissance Robotics 101
Petra Kocmanova, Ludek Zalud, Lukas Kopecny

Modification of Routing Protocols of the Wireless Sensor Network for Increasing the Network Life Expectancy 110
Aleksejs Jurenoks, Leonids Novickis

A Lossless Invisible Watermarking Scheme for Hyperspectral Images 119
Raffaele Pizzolante, Bruno Carpentieri

Influence of Systems for Measurement Using Computers to Popularity of Subject Physics at Elementary School – Some Results 124
Radek Nemec, Stepan Hubalovsky

Hall Effect in Multi-Sensors Systems for Mobile Robot Localization in Uneven Terrain 131
Mihu Dan Tont, Gabriela Tont, Dan George Tont

On the Road to Energy Efficient 5G Mobile Networks 137
Zoran Bojkovic, Miodrag Bakmaz, Bojan Bakmaz

High Speed Brightness Amplifiers for Diagnostics of Fast Processes Obscured by Intense Background Radiation 141
Gennadii Evtushenko, Maxim Trigub, Stanislav Torgaev, Tatyana Evtushenko

Aggressive Behavior and Stress while Driving 149
Mirko Novak, Petr Bouchner, Stanislav Novotny, Zdenek Barnet

Binary Consensus-Based Decentralized Algorithm for Event Detection in Large Scale Monitoring Systems 155
Cristian Dragana, Grigore Stamatescu, Dan Popescu

Low Complexity Binary Signed Digit Multiplier for Modular Multiplication 161
Se-Hyu Choi, Keon-Jik Lee

Tool and Mechanisms for Efficient Transfer of Data in Cloud Client-Server Applications 166
Petr Vobornik

ISBN: 978-1-61804-355-9

Power Balance Interpretation in Sinusoidal Regime of Capacitively-Loaded Gyrator 172
Dan George Tont, Gabriela Tont

The Methods of Decreasing the Influencing Factors on the Results of Cable Insulation Control Carried out with the Complex Methods 178
N. S. Starikova, V. V. Redko

Capacity Limits of Core Optical Transmission Technologies 182
Elias Giacoumidis, Ivan Aldaya, Mohammad Ghanbarisabagh, Nick J. Doran, Jinlong Wei

Flooded Areas Detection Based on LBP from UAV Images 186
Andrada Livia Sumalan, Dan Popescu, Loretta Ichim

The Control System of the PV Concentrator System Cooled by a Heat Sink 192
Alena Okhorzina, Alexey Yurchenko, Norbert Bernhard

Evaluation of Acoustic Data Communication for Fish Farm Monitoring 195
Yoshiaki Taniguchi

Social Aspect of Modern Communications: Internet Addiction 200
Petra Kalibova, Eva Milkova

2D Wedge Filter Design and Applications in Oriented Line Extraction 205
Radu Matei

New Acoustic Sensors for Breathing Investigations 211
Semyon Shkundin, Evgeny Kalashnikov, Sergei Bouyanov, Slava Koryakin

A Model Reference Adaptive Controller Performance of an Aircraft Roll Attitude Control System 217
Hakan Korul, Demet Canpolat Tosun, Yasemin Isik

Watermarking in Regional Medical Imaging 222
Michal Javornik, Otto Dostal, Ales Rocek

An Aluminum-Nickel Micro-Heater-Sensor Device with PI-Compensation 227
P. Deekla, N. Chomnawang, R. Phathanakun, S. Sujitjorn

Two Electrode-Based SOA Intensity Modulators for Adaptively Modulated Optical OFDM Signals 232
Mohamad Hamze, Ali Hamie, Ali Mokdad, Souad Mamo, Ammar Sharaiha, Pascal Morel, Mikael Guegan, Elias Giacoumidis, Jiangming Tang

Impact of Mobility on the Performance of Cognitive Radio Mobile Cellular Networks with Real-Time Traffic 236
Jose Serrano-Chavez, Genaro Hernandez-Valdez, Felipe A. Cruz-Perez, Sandra L. Castellanos-Lopez, Edgar A. Andrade-Gonzalez, Mario Reyes-Ayala, Jose R. Miranda-Tello

Downlink MAP Decoding for the WiMAX System Identification 243
Nouha Alyaoui, Abdennaceur Kachouri, Mounir Samet

ISBN: 978-1-61804-355-9

The Methodology of Maximum Illumination PV Control System 249
Maria Kitaeva, Alexey Yurchenko, Alena Okhorzina

Exploring IEC 61499 for a Distributed Software Architecture in an Onshore Oil Field 255
Lucian-Sorin Dobrescu, Dan Popescu, Oana Chenaru

Performance Analysis on Downstream Link of OFDM-PON Working in IQ Modulation-Heterodyne Detection Scheme 262
Mingzhi Mao, Rongrong Chen, Caixia Kuang, Rujian Lin

Device CAP-10 for In-Process Measurement of the Single-Core Wire Capacitance per Unit Length 272
Aleksandr Goldsteyn, Galina Vavilova

Selecting Suitable Sensor on Building an Electronic Nose 278
Bilge Han Tozlu, H. Ibrahim Okumus, Cemaleddin Simsek

Delay Analysis for Decentralized Passive Optical Network Intelligent Algorithm 281
Sajaa Kh. Sadon, Thavamaran Kanesan, Hizamel M. Hizan, Romli Mohamed

Rectangular Microstrip Antenna for GPS Receiver 287
Mario Reyes-Ayala, Edgar Alejandro Andrade-Gonzalez, Jose Raul Miranda-Tello

A Simple High Gain Observer for the Wind Energy System Based on the Doubly Fed Induction Generator 290
Rachid Lajouad, Fatima Zahra Chaoui, Abderrahime El Fadili

Identification of Control Moment Gyro Faults on Noisy Sensor Data 298
Sang-Eun Beck, Ji-Chul Kim, Hwa-Suk Oh

Semi-Structured Interviews with Teachers of Physics to Determine the Course of the Lessons of Physics of Primary Schools in the Hradec Kralove Region Czech Republic 304
Radek Nemec, Stepan Hubalovsky

2-D ESPRIT Method and Zernike Moments Based on CBIR 308
Chawki Youness, Khalid El Asnaoui, Ouanan Mohammed, Aksasse Brahim

Simulation and Control of Flexible Structure 314
Mustafa Tinkir

Adaptive Traffic Signal Control Using Backbone Routing in VANET 319
V. Vijay, R. Kalpana, N. Moganarangan, D. Vinodh, R. Sriram, K. Gugan

Small Antennas for New Wireless Communications Systems 328
E. A. Andrade-Gonzalez, M. Reyes-Ayala, J. R. Miranda-Tello, G. Hernandez-Valdez

Authors Index 332

ISBN: 978-1-61804-355-9

Plenary Lecture 1

Energy Efficiency Approach: From Wireless Networks to Potential Applications

Professor Zoran Bojkovic
Full Professor of Electrical Engineering
University of Belgrade
Serbia
E-mail: z.bojkovic@yahoo.com

Abstract: In order to provide sufficient and low-cost energy to sustain economic growth and living standards, innovation and development of alternative energy sources are required. Over the past decade, the demand for high-rate multimedia wireless communication services has increased dramatically with the popularity of mobile devices.The need for media rich input/output computation and communication forces mobile users ta charge their devices more often. On the other side , service providers have been adding more and more base stations (BSs) to meet a higher service demand. A large portion of the service providers' operational costs is due to energy consumption of the wireless systems for both mobile users and service providers. This Plenary Lecture deals with energy efficiency approach from wireless networks to potential applications toward 5G systems. Recently, 5G cellular networks are becoming the most active research area in wireless communications.The 5G mobile network is required to have tremendous spectral efficiency (SE) and energy efficiency (EE) improvement simultaneously. As a result, SE, EE, and cost efficiency have been used as three obligatory 5G evaluation metrics. In general, joint energy and communication cooperation is more complex than energy or communication cooperation only. Joint energy and communication cooperation can maximally save cost by applying both energy cooperation on the supply side and communication operation on the demand side. For the realization, the BSs should share the energy information by using the two-way information flow supported by the smart grid. The communication information is exchanged through the back haul connections. As for 5G networks, the primary goal is to satisfy a variety of users needs in a more energy efficient manner. The question often arises will be where the energy can be further saved and what available information in the network can be exploited. Starting with energy saving approach, cellular networks with energy and communication cooperation are pointed out. Next, recent advances in energy efficient networks and their application in a new generation of mobile communication- the fifth generation (5G) are presented and discussed. Finally, the corresponding challenges are emphasized.

Brief Biography of the Speaker: Prof. Dr. Zoran Bojkovic from the University of Belgrade, Serbia is the permanent Visiting Professor of the University of Texas at Arlington, UTA, TX, USA, EE Department, Multimedia System Lab. As Assistant Professor, he was a visiting researcher at Stanford University, Stanford, CA, USA, Information System Lab., hosted by Prof. Robert M. Gray. Until now, he was a visiting professor at more than 20 Universities worldwide and taught a number of courses in the field of electrical technology, digital signal processing, communication and computer networks, wire/wireless multimedia communications. Prof. Zoran Bojkovic is the co- author of 7 International Books and 20 Chapters of the International Books, published by Prentice-Hall, Wiley, CRC Press ,Taylor and Francis Group, Springer, Elsevier, etc. Some of the Books have been adopted in different countries and have been translated in China, India, Canada, Singapore. Also, he is co-editor in 75 International Books and Conference Proceedings. He served and is still serving as Editor-in-Chief, Associate Editor, Guest Editor ,Editorial Board Member and Reviewer in International Journals. He was and still is General Chair, Co-chair TPC Member at well - known conferences worldwide . He has published more than 450 papers in peer-reviewed journals and conference proceedings. Prof. Zoran Bojkovic has conducted many Keynote/Plenary/Invited Lectures, Workshops/Tutorials, Seminars. As a result of numerous international collaboration, he participated in many international scientific and industrial projects. He is a Senior Member of IEEE, Member of EURASIP, IASTED, SERC Korea, expert in AMSET, expert in European Project services , full member of Engineering Academy of Serbia, member of Serbian Scientific Society.

ISBN: 978-1-61804-355-9

Plenary Lecture 2

Some Applications of Fuzzy Logic in the Selection of Alternatives Considering Multiple Parameters

Professor Amaury A. Caballero
Florida International University
Department of Electrical and Computer Engineering
USA
E-mail:caballer@fiu.edu

Abstract: In any decision-making process, it is necessary to evaluate different parameters and disclose the effect they have in the solution in order to optimize it. If the criteria are mathematically quantifiable, a mathematical model may be created for the evaluation process. The application of fuzzy logic is ideal for the solution of this type of problem. There are several common factors when using this method in the optimization of any task. Among them, the characteristics of the membership functions and the criteria used in the optimization as well as the selection of the experts are of fundamental importance. Fuzzy logic is not limited to a specific field of knowledge or industry. It can be applied wherever it is necessary to find the best solution to a problem based on different measurable parameters that somehow impact the result. In this lecture several examples are presented in order to clarify concepts such as the vertical handoff target selection in a heterogeneous wireless network; selection of the best contractor for doing a construction project during a bidding process, and the selection, from a security standpoint, of the best public transportation agency.

Brief Biography of the Speaker: Amaury A. Caballero obtained his Bachelor Degree in Electrical Engineering from the University of Havana, Cuba, earned his Ph.D. in Technical Cybernetics from the Energy Institute of Moscow, Russia, and his Professional Engineer License from the state of Florida, USA. He taught and did research at the Higher Polytechnic Institute of Havana, where he obtained the title of Professor and directed research in the areas of Automatic Control and Robotics. He was also a member of the Higher Scientific Council of the Cuban Academy of Sciences and received awards recognizing his work from the Cuban Ministry of Higher Education and the Technical University of Brno, in Czech Republic, where he also participated in a graduate study and in researches of robotics in conjunction with faculty members. He has been also invited to give presentations about fuzzy logic at the “Universidad de Pamplona” in Colombia, the “Universidad Catolica de Santa Maria”, and the “Universidad Autonoma” in Peru, the “Universidad Tecnologica Centroamericana” in Honduras, and the “Universidad Autonoma Estatal del Estado de Hidalgo”, in Mexico, where he also imparted a graduate course in fuzzy logic. Dr. Caballero has published two books in the area of automatic control and obtained five certificates of invention in the same area. He also has published research reports, journals papers and proceedings in scientific conferences, totaling over 100 publications. Presently, he is a Senior Lecturer at Florida International University, where he has taught nine electrical engineering undergraduate courses and one graduate course in fuzzy logic, in the department of Electrical and Computer Engineering Also he has conducted in-depth research in the areas of automation applied to construction management, and in the use of rough sets and fuzzy logic for object discrimination in databases, among other applications.

ISBN: 978-1-61804-355-9

Plenary Lecture 3

Interactive Driving Simulators – Modern Tools for Training and Research and Development in the Area of the Human–Machine Interaction (HMI) in Transport

Professor Petr Bouchner
Head of Department of Vehicles at Faculty of Transportation Sciences
Driving Simulation Research Group
Czech Technical University in Prague
Czech Republic
E-mail: bouchner@lss.fd.cvut.cz

Abstract: From a very beginning of history of modern transport it has been necessary to solve problems of safety and reliability of transporting vehicles and its operation. The source of failures have significantly changed during time. As the vehicles and their control systems in early phases of their evolution were generally unreliable and most of the focus had to be set on solving technical and technological problems - meanwhile the problem of the human operator himself was mainly narrowed to learning how to operate the vehicle and manipulate properly its control systems – in second half of 20's century the situation started to turn around. With the sophisticated design, construction and production technologies, it started to be seen that the focus has to be set to the human operator and HMI as the weakest part of this system. This covers not only perfect training in operation but also deep understanding of links and functions of a complex system of HMI and interfaces between them. Problems of reliability and safety of interaction between the human operator (driver) and him/her controlled artificial system (machine, vehicle) become crucial for transport safety.
The presentation shows and explains main principles of the research tools – the advanced interactive vehicle simulators, which are continuously being developed by the Driving Simulation Research Group at Czech Tech Univ. It encompasses passenger cars, two-wheelers, trucks, rail engines and others. This field of R&D deals with simulation technology but also scenario and experiment design and mainly measuring tools and methods, which could extract useful knowledge from measured data. An indisputable role in this area is played by so called psychophysiological measures. The lecture introduces problems of the HMI research field as well as problems of user interfaces in systemic point of view. Beside those general approaches, the lecture introduces in more detail main research focus of our institute - ergonomics and human factors in vehicle control. The lecture is based on results and examples from 15 years of research effort in this area that will be shown in pictures and videos.

Brief Biography of the Speaker: Academic career: 2003 - Master Degree at CTU Prague (Faculty of Electro-engineering), specialization in computer engineering, 2007 - Doctoral Degree at CTU Prague (Faculty of Transportation Sciences) "Driving simulators for HIM research", 2011 degree of associate prof. (doc.) at CTU Prague. Since 2003 researcher and university teacher, since 2007 Head of Driving Simulation Research Group, since 2008 deputy head of Laboratory of Systems Reliability of FTS,CTU and Institute of Informatics of Academy of Sciences of Czech Republic, since 2011 head of Department of Vehicles at FTS CTU in Prague, since 2013 member of the faculty Scientific Board.
Scientific activities: research activities in interactive and driving simulator construction and development, HMI in vehicles, human factors in transportation, measurements and analysis of complex data, implementation of virtual reality tools into the experiments, design of experiments and their analysis, member of editorial board of scientific journal Neural Network World and scientific journal Advances in Transportation Studies.
Author and coauthor of several tens of papers, chapters in journals, book chapters, books, research report on interactive simulators, human factors in transportation, ergonomics, driver's attention and fatigue. Member of expert groups of PIARC, ESoP by European Committee, Czech National Committee for Norms, member of Czech Board for Cosmic Technologies. Main solver (responsible) of several national scientific and applied research projects (grants).

ISBN: 978-1-61804-355-9

Plenary Lecture 4

Hierarchical Fuzzy Petri Nets Approach of Simultaneous Task Assignment for Autonomous Mobile Robots

Professor Gabriela Tont
Department of Control Systems Engineering and Management
Faculty of Electrical Engineering and Information Technology
University of Oradea
ROMANIA
E-mail: gtont@uoradea.ro

Abstract: Task assignment processes and its control implying reasoning about objects and resources and their changing states are dominated by discrete or stochastic-event dynamics or both. Estimating the components position of the mobile robot provided by sensor generates unknown, hidden variables which will be model by the means of probabilistic inference taking into account incomplete and uncertain information. The modeling technique proposed in this paper, managing the uncertainty, vagueness and imprecision, bridges the aspects of Petri net theory, as a tool for the representation dynamic discrete event systems, with efficiency of fuzzy rule based reasoning by means of Hierarchical Fuzzy Petri Nets. A case study regarding a reasoning mechanism and an explanation of the reasoning process through task assignment in mobile robot system is explored using Bayesian belief network.

Brief Biography of the Speaker: Graduated “Politehnica” Institute of Bucharest and defined her professional training by earning Ph. D degree in Electrical Engineering at Technical University Cluj Napoca.
Caring out research and teaching projects in reliability engineering and management is, at present, professor of the Faculty of Electrical Engineering and Information Technology, University of Oradea.
Recent research conducted includes reliability analysis and data modeling in dynamical, non-linear systems, simulation modeling for risk assessment in context-aware computing and intelligent e-learning technologies.
Certified external quality auditor, has an extensive experience in strategic total quality management applied in manufacturing processes and quality system improvements with six sigma initiatives, optimizing TQM (zero defects, six sigma), quality planning (QFD).
Participated in several international and national projects as director, scientific manager or member.
In the fields above she has authored and/or co-authored 10 books and 9 chapters in books, 31 papers in editor conference proceedings; 68 journal papers, 110 conference papers.
Member in Editorial Boards of 8 journals, delivered 18 plenary/keynote lectures.
Reviewer for WSEAS conferences and WSEAS Transactions journals.
Actively participated at international and national conferences, in 16 was a member of scientific and/or organizing committees of conferences.

ISBN: 978-1-61804-355-9

Plenary Lecture 5

Data Compression Today: A Journey through Better Understanding Data

Professor Bruno Carpentieri
Department of Computer Science
University of Salerno
ITALY
E-mail: bc@dia.unisa.it

Abstract: Digital data compression is aimed today by the economic need to save bandwidth in communication. As recent researches have shown, data compression, clustering, data classification and learning are all facets of the same multidimensional coin and data compression is strictly bound to efficient learning.
In this talk we will review the current state of the art in the field and we will exploit the relationship between data compression and the knowledge that can be acquired through the compression process.

Brief Biography of the Speaker: Bruno Carpentieri received the “Laurea” degree in Computer Science from the University of Salerno, Salerno, Italy, and the M.A. and Ph.D. degrees in Computer Science from the Brandeis University, Waltham, MA, U.S.A.
Since 1991, he has been first Assistant Professor and then Associate Professor of Computer Science at the University of Salerno (Italy). His research interests include lossless and lossy image compression, video compression and motion estimation, information hiding. He has been for many years Associate editor of the journal IEEE Trans. on Image Processing. He was chair and organizer of the International Conference on Data Compression, Communication and Processing 2011, co-chair of the International Conference on Compression and Complexity of Sequences, and, for many years, program committee member of the IEEE Data Compression Conference.
He has been responsible for various European Commission contracts regarding image and video compression and digital movies.

ISBN: 978-1-61804-355-9

Authors Index

Aldaya, I. 182
Alyaoui, N. 243
Andrade-Gonzalez, E. A. 236, 287, 328
Bakmaz, B. 137
Bakmaz, M. 137
Barnet, Z. 149
Beck, S.-E. 298
Bernhard, N. 192
Bojkovic, Z. 44, 137
Bouyanov, S. 211
Brahim, A. 308
Carpentieri, B. 119
Castellanos-Lopez, S. L. 236
Chaoui, F. Z. 290
Chen, R. 262
Chenaru, O. 255
Chiaia, B. 33
Choi, S.-H. 161
Chomnawang, N. 227
Conti, L. 33
Costa, C. R. F. 65
Cruz-Perez, F. A. 236
Deekla, P. 227
Dobrescu, L.-S. 255
Doran, N. J. 182
Dostal, O. 222
Dragana, C. 155
El Asnaoui, K. 308
El Fadili, A. 290
Ellis, A. D. 39
Evtushenko, G. 141
Evtushenko, T. 141
Galtseva, O. 91
Ghanbarisabagh, M. 182
Giacoumidis, E. 182, 232
Goldsteyn, A. 272
Guegan, M. 232
Gugan, K. 319
Hamie, A. 232
Hamze, M. 232
Hernandez-Valdez, G. 236, 328
Hizan, H. M. 281
Hubalovsky, S. 124, 304
Ichim, L. 186
Isik, Y. 217
Javornik, M. 222
Jurenoks, A. 110
Kachouri, A. 243
Kalashnikov, E. 211
Kalibova, P. 200
Kalpana, R. 319
Kanesan, T. 281
Kim, J.-C. 298
Kitaeva, M. 249
Kocmanova, P. 101
Kopecny, L. 101
Korul, H. 217
Koryakin, S. 211
Kuang, C. 262
Kubale, M. 51
Lajouad, R. 290
Lee, K.-J. 161
Lin, R. 262
Lord, A. 39
Mamo, S. 232
Mao, M. 262
Mashko, A. 72
Matei, N.-M. 96
Matei, R. 205
McCarthy, M. 39
Milkova, E. 200
Milovanovic, D. 44
Miranda-Tello, J. R. 236, 287, 328
Moganarangan, N. 319
Mohamed, R. 281
Mohammed, O. 308
Mokdad, A. 232
Morel, P. 232
Nemec, R. 124, 304
Novak, M. 55, 149
Novickis, L. 110
Novotny, S. 149
Obszarski, P. 51
Oh, H.-S. 298
Okhorzina, A. 192, 249
Okumus, H. I. 278
Pelikan, E. 55
Phathanakun, R. 227
Pizzolante, R. 119
Placidi, L. 33
Plotnikova, I. 91
Popescu, D. 96, 155, 186
Popescu, D. 255
Redko, V. V. 178
Reyes-Ayala, M. 236, 287, 328
Rocek, A. 222
Sadon, S. K. 281
Sakakibara, K. 23
Samet, M. 243
Sanchez, C. 39
Serrano-Chavez, J. 236
Sharaiha, A. 232
Shkundin, S. 211
Simsek, C. 278
Sirkemaa, S. 19
Sriram, R. 319
Stamatescu, G. 155
Starikova, N. S. 178
Sujitjorn, S. 227
Sumalan, A. L. 186
Svitek, M. 55
Taketsugu, J. 23
Tang, J. 232
Taniguchi, Y. 195
Tinkir, M. 314
Tont, D. G. 131, 172
Tont, G. 77, 131, 172
Tont, M. D. 131
Torgaev, S. 141
Tosun, D. C. 217
Tozlu, B. H. 278
Trigub, M. 141
Vavilova, G. 91, 272
Vijay, V. 319
Vinodh, D. 319
Vobornik, P. 83, 166
Votruba, Z. 55
Wei, J. 182
Wright, P. 39
Youness, C. 308
Yurchenko, A. 192, 249
Zalud, L. 101
Zucchi, W. L. 65

ISBN: 978-1-61804-355-9